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How Payment Service Processors Enter Hungary

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The global financial world is on the edge of a wide transformation in order to deliver faster, more secure and overall better services to customers. The European Union is enhancing this transition through a well thought set of rules in order to maintain stability and agreement between the participant countries and to grow EU-inland financial entities as whole, therefore setting such regulations for open banking as the Payment Services Directive (PSD and PSD2 – a revised version of the older directive), which allows third parties to intervene in the service chain and provide a variety of banking solutions to banks and their customers.

The thesis is a research-based analysis focusing on the key indicators from the perspective of a Payment Service Processor (PSP) when entering a new market. Identifies the foundations of a theory which makes the reader understand the basis on which an investment of a PSP is valid or rejected.

Hungary is one of the fastest developing countries within the European Union. The transition from cash to e-solutions and most importantly to banking is significant. Therefore, the thesis focuses on this country as whole as it possesses a rich customer base and an outdated infrastructure which third party service providers can stabilize and develop quickly. Besides pricing, the research focuses on the biggest banks in the region, considering customer base, which is the income accelerator of PSPs and the maturity of digital based payments to understand, compared to other countries, where these countries stand on the long run service implementations.

The outcome of the thesis gives a clear understanding for the commissioning company whether the expansion should be taken into consideration and if so, what the numbers are on which the pricing can be done.

Keywords
Payment service processors, Hungary, Banks in Central Europe, Fintech, Digital Payments

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1 Introduction

This chapter supplies initial background information and gives a clear overview on the objectives covered in later chapters. It lists demarcation and expected benefits, international aspects, key concepts and key sources. The chapter ends with observing risks that might occur during or after the research had been done.

1.1 Background and case company

The commissioning company is a Nordic-based payment service processor, which by request cannot be named in the thesis as to avoid leakage of sensitive information and to maintain fair competition in the market.

Their goal is to understand possible market entry by setting up entry requirement criteria, which the thesis is founded on. The criteria are strictly set by the Card/Customer Management Department (CMS) because they are the business investigation segment of the company. As said earlier, the firm's main idea is not to be the biggest payment service processor in the European Union, but the biggest and the most powerful in its profile's key service portfolio.

Until now, the enterprise was focusing on countries where financial infrastructure was well developed with a reasonable customer-base aware of daily banking procedures. Now after several mergers and acquisitions they started to extend their interest to fast developing countries where there is the need for outsourced payment solutions and where the new and older generation is getting used to new payment methods in an exponentially increasing customer segment.

1.2 Case introduction

The commissioning company is anticipating expansion opportunities to the Eastern part of Europe to offer specialised payment solutions to the banks and other financial entities in need for outsourced payment methods. As there is a huge competition in the market between neo-banks and normal everyday banks, regular banks with long coming structure and background have to consider outsourcing certain parts of their in-house payment related tasks to professional third parties in order to stay in game for customers, as end users, everyday banking civilians through their mobile phones would like to deal with financial activities in an instant.

To perceive the current stand of the market, one must look into the comparison between Hungary and other, developed countries in the sector, such as the Nordics. By doing so we get a benchmark and visual chart of where the market is leading the countries and what is the current status of development in the surveyed nation. Combining the trends and news with the estimation, we could get an approximate timeframe for a reasonable market penetration.

Furthermore, the second investigative question's concept is to identify not necessarily the most profitable banks but the ones which have largest number of customers as payment service processors receive their revenue stream after the amount of card holders in a maintenance portion fee for both debit and credit card procedures.

As said before, the customer base gives the potential revenue for a PSP, therefore this is one of the most crucial factors which drives the business. One bank can be in several countries possessing large number of customers, but they tend to be country specific and they perform better in their homeland, therefore the list of banks is based on several other customer related inputs to get the market landscape.

The infrastructure setup suggests the readiness for the new methods in Fintech. Implementing new technologies take time, effort and especially funds, thus is important to be aware of the current state of facilitations and the system they use on a day-to-day business to satisfy customer expectations.

Lastly, a firm has to price its product in favour for profitability. To create suitable pricing which attracts expansion investment, the research has to pinpoint the pricing levels according to benchmark analysis. This is done by comparison, such as the Big Mac model. Different countries charge different prices for the services as the standard and cost of living indexes differ as well according to the country's economic status. The agenda is to find an answer on how Hungary differs from other countries and whether it is profitable to do a business there or not.

PSPs have to be up to date in how these banks outsource their payment services and where payment service processors are able to compete. The focus is not just on how much but what are the specific areas they need a party to help them with.

1. RQ: How do Payment Service Processors enter Hungary?
2. IQ 1: What is the maturity of digital based payment services in Hungary?
3. IQ 2: What could be the ten biggest banks to target as customer conversion?

4. IQ 3: What is the current pricing level for payment services and how do they compare to other European countries?

The commissioning company has concluded several researches throughout the years in the Western European region in developed countries. Just recently looked towards the developing countries such as Hungary in Eastern Europe. These countries require slightly different approach as the infrastructural background might differ from more developed countries.

In the following is the table over the theoretical framework, research methods and the list of chapters where each and one of the research question results can be found.

Investigative Questions	Theoretical Framework	Research Methods	Results Nr. Of Chapter
IQ 1: What is the maturity of digital based payment services in Hungary?	Use of cash versus digital based payments, trend change analysis, statistics	Mixed Research	3.1
IQ 2: What could be the ten biggest banks to target as customer conversion?	Statistical analysis of banks portfolio and customer base management	Qualitative Research	3.2
IQ 3: What is the current pricing level for payment services and how do they compare to other European countries?	Market analysis and comparison of market trends and cycles	Mixed research	3.3

Table 1. Overlay Matrix

1.3 Demarcation

The research is not going deep into technical infrastructural information, but certainly explains what those in an elementary level are that affect the current payment trends, therefore certain parts had to be left out in order to maintain the Bachelor thesis agenda.
It focuses on the market research from financial perspective, therefore leaving out legal and legislation viewpoints, except a touch on PSD2 implementation and its result. Moreover, according to the three investigative questions it describes banks' customer portfolio as potential revenue stream for PSPs, pricing according to international pricing level

method such as the Big Mac Index and Cost of Living indexes and how is use of cash changing to the use of digital payments.

The information used in the thesis is covering the knowledge gathered until 1st November, strictly from the viewpoint of financial entities and benefiting the possible expansion opportunity of a Payment Service Processor.

1.4 International aspects

The writer of this thesis is a Hungarian born professional-to-be, completing its studies at Haaga-Helia University of Applied Sciences, Finland. The commissioning company is a multinational firm in the Nordics, where generally more than fifty different nations' citizens represent themselves and their thoughts daily. The backbone of the thesis can be used further in the future for other countries' evaluation, thus serving as multifunctional international evaluation plan, with regards of any firm considering the entrance to other countries in the region. The research is conducted by using statistics and correlational data between diverse European countries.

1.5 Expected benefits

The main stakeholder of this research analysis is the commissioning company itself and especially the responsible department within. The main point is to get clarification and clear vision of future possibilities and to be a step ahead of competitors. Many companies, such as VISA is broadening its service portfolio by the end of 2019 in Hungary, therefore the competition for banks is about to start in different outsourceable segments.

As for the author it is an excellent opportunity to deepen its mindset in the international payment methods, comparisons and benchmarking, banking outlooks and creation of trends. It is an exciting project to be involved with as different banks have different background and especially with the fast spreading popularity of neo-banks such as Revolut and N26, banking is now completely different than it used to be. People are able to handle their everyday banking life using an application, create e-wallets and bank accounts, transfer funds within a fragment of a second, give and get loans and receive mortgages. It is a pleasure to be in the epicentre of the fourth industrial revolution aka. Industry 4.0 and to help on a micro level the establishment of a new era, which will result in a harmonized way of using online banking and payment services on a nonstop basis without limits. It is believed that this revolution will bring more wisdom to clients and customers and people will be more aware of their financial situation than ever before.

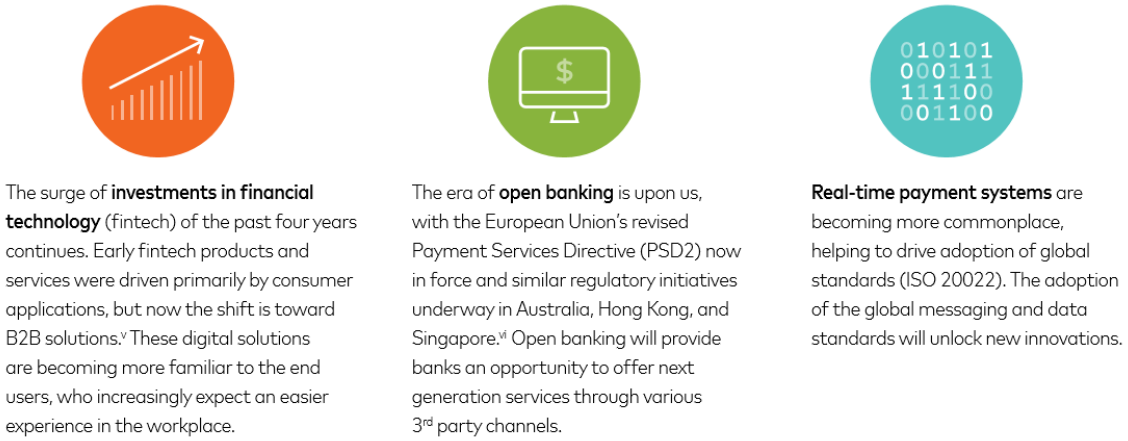

Figure 1. How Industry 4.0 is defining the future of business payments (MasterCard Business Payments 2022)

The third stakeholder is the schooling institution, Haaga-Helia University of Applied Sciences. They do not only give an approval to this work but also had large influence on the writer's development and characteristic, which eventually led for an internship yielding this thesis.

The creator is hoping that all who reads this study will enrich themselves with valuable content to evaluate and further develop their professional life or widen their interest in this everchanging world.

1.6 Key concepts

Payment Service Processor (PSP) is a financial technology company which gives specialised, outsourced solutions for banks and other financial entities. It creates the channel which through end users can exchange value between each other in different payment ways. It equips merchandisers with terminals for payment and banks with modern gateways in order to provide non-stop processing in real time, resulting customer satisfaction.

A **bank**, specifically a commercial bank is a type of financial institution that accepts deposits, offers checking account services, makes various loans, and offers basic financial products like certificates of deposit (CDs) and savings accounts to individuals and small businesses. (Investopedia, 2019)

Key performance indicators (KPIs) refer to a set of quantifiable measurements used to gauge a company's overall long-term performance. KPIs specifically help determine a company's strategic, financial, and operational achievements, especially compared to those of other businesses within the same sector. (Investopedia, 2019)

Industry 4.0 is the fourth industrial revolution which is changing all output sectors to fully/semi-automatize their production using smart devices, machine learning and the Internet of Things.

Financial technology (Fintech) is used to describe new tech that seeks to improve and automate the delivery and use of financial services. At its core, fintech is utilized to help companies, business owners and consumers better manage their financial operations, processes, and lives by utilizing specialized software and algorithms that are used on computers and, increasingly, smartphones. Fintech, the word, is a combination of "financial technology". (Investopedia, 2019)

Digital payment is not a single instrument but rather an umbrella term that is applied to many instruments used in various ways. It can be defined as a way of paying for services or goods via an electronic medium without the use of cash or check. It is also known as electronic payment system or e-payment. (Techbullion, 2019)

Card/Customer Management Service is the responsible department in Payment Service Processors for payment card and account management services. Their duty is to secure smooth payments using any device (not only cards) and to enable supporting financing solutions like revolving credit and consumer finance. Hence the traditional Card Management has changed to Customer Management.

PSD2 (Payment Services Directive 2) is a revised version of the older 2007 version PSD1 which aims at facilitating consumer access to their banking data and driving innovation by encouraging banks to exchange securely customer data with third parties. (Gemalto, 2019) In reality, this means that third party service providers are going to have access to banks service chain whilst giving additional beneficial solutions for end users, which helps to engage with everyday banking life in the most secure way, yet.

Big Mac Index is measuring purchasing power parity (PPP) between nations, using the price of a McDonald's Big Mac as the benchmark. Purchasing power parity is an economic theory which states that exchange rates over time should move in the direction of equality across national borders in the price charged for an identical basket of goods. In this case, the basket of goods is a Big Mac. (Investopedia, 2019)

1.7 Key sources

Payment Service Processors have been in the financial knowledge for several decades. Very few books are available right now which discuss their processing and business method, as the fintech world is changing into the next gear and most of their business-related information is confidential.

The general information on banks' KPIs are accessible for the audience through the banks' websites and those are the values which the author uses for the benchmarking comparison between potential banks.

The Hungarian Central Bank makes studies on the amount of cash used on a yearly basis and how that is comparing to the change of digital payments. This study has averaged from the last three - four years; therefore, the maturity is clearly visible, and figures are included in the research chapter. Mostly, central banks and statistic institutions are focusing on such figures, but statistical analysis is only available for paying customers.

During the pricing comparison, no real time data can be used, but only theoretical ones as PSPs' pricing is strictly confidential to protect fair competition.

1.8 Risk analysis

As stated beforehand this industry is experiencing a wide transformation as newer payment solutions, latest simplified applications, recently founded neo-banks, global and local laws are affecting it. As for example the PSD2 is just being implemented with patience from the European Commission, the outcome of instant payments is not visible yet. The thesis is focusing on covering the current trends and foresee upcoming events and implementation results based on historical and present values and information.

It might be also possible that there would be a research analysis done by other business entity in Europe about the same country by the submission date of this thesis and the writer considers the risk of lacking certain valuable information from banks on their current and past trends on their customer base to draw conclusion.

Despite all, the author is determined that the paperwork has significant impact on the firm's future expansion and that the challenges faced throughout the analysis would be mitigated and cleared in favour for success.

2 Use of cash versus digital based payments in Hungary

In this chapter the followings will be examined in three parts. First, laying down the basic theoretical framework for cash versus digital payment in general and how digitalization in the financial sector affected payment methods in Hungary. After that, there will be given a quick overview of banks in Hungary and how they integrated digitalization. Finally, an examination of the pricing level of digital based payments currently in Hungary.

2.1 Cash versus digital in general

Sweden was the first country to officially go cashless, with other countries following in the likes of them, for example Australia. A cashless society is probably hard to imagine currently, but all indicators seem to point into a future without cash. How will it look like and what will it mean exactly?

There are many headlines nowadays, that urge businesses to shift rapidly to cashless solutions, otherwise they will gain a significant market disadvantage, but in reality, the situation is much more complex and real-world change is much more gradual. In fact, even Sweden is not 100% cash-free yet. Being officially cash free merely means less reliance on cash transactions and more acceptance of cash-free transactions than other countries. Let's have a realistic look at the role of digital payments in the near future, with a list of pros and cons of offering cashless payment methods, and what a gradual shift to a cashless society will mean in practice. (Business News Daily 2019. Cash free society)

Cash and credit card alternatives are becoming increasingly popular, especially in particular sectors and territories. The most popular digital and alternative transaction services currently are as follows:

Store Apps: Big companies have led the way with digital payments with encouraging customers to purchase through their stores. By easier online ordering through mobile applications and loyalty programs and special discount offers big chains like Starbucks and McDonalds are gradually increasing cashflow within their store apps.

These store apps have still a long way to go before they can be counted as the primary way of interaction with customers, they are an important steppingstone in acclimating customers to digital payments. Ushering technology is not the main obstacle companies have to face, rather getting customers to use them. Currently Starbucks has been the most successful company in the US to integrate a digital transaction app into its portfolio, with 23.4 million users, but many more big companies are to follow.

Apple Pay: Apple's digital payment application, is increasingly common in everyday shopping transactions. Although it does not work on Android devices, only on Apple phones and Apple watches, it is accepted at an increasing number of retailers and chains. The application works together with banks and credit card companies to process payments.

Google Pay: Google Pay works on Android devices and functions the same way as Apple Pay. It has an online and offline mode too, and most of the chains that accept Apple Pay also accept Google Pay. Google Pay works together with banks to process payments, plus services like PayPal and Visa Checkout.

Samsung Pay: A digital wallet, it offers opportunities for users to link credit cards, bank accounts, and credit unions to the app with integrated online and offline payment. Although it does not yet have a huge variety of acceptance points, their numbers are increasing, and it is accepted in most places that accept digital transaction alternatives.

Most places accepting digital payment methods still also accept cash. Accepting digital payments besides cash payments seems to work everywhere in general, since there is not setback; you can pay either way. However, establishments that only accept digital payments may face some degree of backlash.
An issue some have with businesses that do not accept cash is, that they do not favour people with lower incomes, recent immigrants, and those in general who do not have access to credit and traditional banking.
This is a major phenomenon at the moment, with certain regulations being created by law to control cash-free businesses. For example, in the US, Philadelphia became the first city to ban cash-free ventures, with others, like New York to follow.
Generally speaking, if you are a business owner, you should still consider accepting cash payments besides digital ones, even if legislation doesn't regulate it, since shifts in overall uptake always take time.

However, on the other side, accepting digital payments in addition to cash is considered the future, offering many benefits to business owners, employees and clients alike. For example, quick tap-and-go app payments are much faster to process for both customers and employees, meaning quicker service.
Also, digitalizing payments make it harder for employees to steal from businesses, which is regarded as a major factor, since according to certain statistics 30% of inventory loss is referred to as employee theft.

Offering digital payment options also has a marketing and image aspect to it, by showing you are a modern forward-thinking business.

Although the image of a cashless society has had roots for a long time, in reality a world with digital-only payments is still far away. It took many years for store credit systems to be replaced by credit cards, and cash is still in circulation.
The first national department store in the US to accept cards J.C. Penney in 1979, and it took years for this to become common practice.

Digital payments will probably one day replace cash all together, but since credit cards haven't been able to supersede cash entirely, it is highly unlikely, that digital transactions will become the sole way of money transaction anytime soon.
The expansion of digital payment methods also has a social aspect to it: digital only businesses have more success in areas that are not financially diverse. Regions with a higher GDP generally have more trust in technology and digital security and are likely to shift to solely digital payment methods early on. Therefore, ventures with a diverse clientele are less likely to go cash-free, as doing so would hurt their business.
Also, according to common practice, smaller establishments are slower to integrate new technology than one would presume. There is still a massive list of small ventures, that still do not have websites and do not accept credit cards, and a large number of successful restaurants that do not offer point of sale systems.
Scepticism and cautiousness are still a major factor when shifting to new technological methods. In general, smaller ventures will stay with traditional ways of money transactions until possible.

The seamless processes in completion of payments and a reliable, efficient operation of the financial market system are vital for a real economy and financial transactions. Payments in central bank or commercial bank money in account and transactions performed with financial instruments need centralised systems that provide for the clearing and settlement of cashflow. The Hungarian Real-Time Gross Settlement System (the so-called VIBER) is run by the MNB. Its main function is the settlement of substantial amounts of time-critical money and capital market transactions between parties and on behalf of their customers. The Interbank Clearing System (ICS) is a gross payment system primarily for the clearing of low-amount payments run by GIRO, with two clearing modes: intraday and overnight clearing. GIRO executes the clearing of payment transactions, while the MNB is responsible for settlement. Card transaction clearance is executed within the systems of international card companies (Visa, MasterCard). Branches of the KELER Group, the cen-

tral securities depository (KELER CSD) and the central counterparty (KELER CCP) manage securities clearing and settlement services, and the filing of Hungarian securities. The MNB's supervision in Hungary includes that of VIBER, the ICS, KELER CSD and KELER CCP.

The massive increase in digital financial transactions experienced in past years continued in 2017, with the increasing popularity of payment by card as the main factor. Compared to 2016, in 2017 the amount of card purchases increased by more than 25 percent, that is more than the increase in turnover realized compared to the previous year. The tally of direct debit transactions grew by 3 percent, while credit transfers increased by 5 percent, which counts as a massive number in contrast to previous years. The amount of cash withdrawals also increased too by 1 percent, reaching approximately 116 million.
Payment habits in Hungary can be directly reviewed in the retail sector by the turnover of the online cash registers connected to the National Tax and Customs Administration. MNB created an analysis from the 2015–2016 anonymised database consisting of the most common use of electronic payments in the retail sector. (MNB 2019. Payment System Report)

Online cash registers in Hungary perform about 3.7 billion transactions annually with an amount of approximately 10 thousand billion forints. Cash transactions make up a major portion of the turnover in a value and volume aspect alike. There 704 million card transactions shown in the database, that is less than the 888 million transactions registered in the statistical data reporting of MNB. This is possible, because online cash registers are not compulsory in retail stores, therefore a segment of the services sector is not present in the database. The proportion of digital transactions increased in this period too, meaning the average value of cash payments increased from 2000 forints to 2100 forints, and at the same time card transactions decreased from 6300 forints to 6000 forints.
Taking the whole year into account, the modernization of the payment infrastructure mainly came to light in the major extension of the payment card acquiring network. In 2017, the tally of accounts maintained with payment service providers was approximately 10.5 million, and there was only a minor escalation of merely 1% in the 6.6 million accounts primarily used for payment purposes compared to 2016. The amount of payment cards distributed increased by nearly 2%, exceeding 9.1 million by December. The payment card acquiring system developed significantly in 2017, with a nearly 25% increase of physical points of sale. This meant, that card payment was accepted at 106 thousand locations by late December 2017. The number of POS terminals operating at points of sale increased too, by nearly 25%, and reached more than 136 thousand. The rapid development in the acquiring network is mainly due to the POS terminal installation programme

created by the Ministry for National Economy. The programs' goal is to establish 60 thousand new terminals in total in two phases, with low costs for vendors thanks to backing from the state. After a solid annual increase of 11%, the amount of online points of sale was almost 9400 units at the end of 2017.
As of now there is opportunity to pay by card in the retail outlets that comprise the majority of the retail turnover. It was only available to pay by card in less than 33% of the domestic retail outlets part of the 2015–2016 OCR (Optical Character Recognition), but these places made up more than 66% of the total turnover. As the sales turnover of locations that accept payment cards is usually higher, these points of sale made up a total 75% of transactions.

Card acquiring for small retail outlets is still much lower than that of bigger ones. Statistical data clearly shows that card acquiring is in close connection with the yearly sales of the concrete shop. Examining the distribution of shops by size we can conclude that the Hungarian retail sector is made up of many small shops and a lesser number of significantly larger ones. The yearly sales turnover of nearly 50% of the retail outlets is no more than 10 million forints, and only a small portion of them acquire payment cards. The other half of the shops have a yearly sales turnover of about 10 million to 100 million, their card acquiring customs are mainly based on their size. Nearly every shop with a yearly sales turnover over hundred million forints acquire cards, but the amount of such shops is low.
Card purchase volume in 2017 increased in a never before seen amount. Both the number and value of payment transactions executed domestically and externally with the use of Hungarian cards grew by 26 percent, outpacing previous years, that were already showing a positive trend. In line with the previous years, purchase turnover without the material presence of the card was the most rapidly growing sector in 2017, with an expansion rate of around 35% in numbers and total value of transactions too. Even tough, payment transactions in connection with e-commerce still make up a relatively small percentage of the total card payment turnover. There were around 77 million transactions with a total value of 828 billion forints executed by Hungarian cardholders at domestic and foreign online points of sale, which still is only a small portion of the total purchase turnover.
The number of cash withdrawals stayed the same approximately, while the amount of cash withdrawn increased a little bit during the year. In 2017, the number of cash withdrawals by card was just over 108 million forints, that is a minor growth of less than 2%. In comparison, the total amount of cash withdrawn grew more significantly, by approximately 8%, with clients of payment service providers withdrawing more than 7400 billion forints, resulting in an average amount of 68 thousand forints per transaction. In the case of retail customers, who comprise 98 percent of cash withdrawals, a lower value of ATM transactions is the most prominent (64 thousand forints), while the use of POS terminals at bank

branches is primarily of corporate clients, who initiate a smaller number of transactions, but with a higher average value (254 thousand forints).
In 2017, the utilization of contactless technology has become more prominent in the case of purchasing by card, which is mainly possible because of the rapid advancement in the relative infrastructure. The number of contactless purchases in Hungary grew by 65% in regard of cards issued in Hungary, with their value doubling from the previous year. This meant, that more than 66% of all purchases took place this way, adding up to half of the total turnover in terms of value. In comparison, the number of traditional physical purchase transactions dropped by more than 25% since 2016. The growth in contactless turnover is mainly due to the rapid development in infrastructure over the past years. Compared to 2016, the number of payment cards with contactless service increased by almost 18% in 2017, with 72% of cards offering this function. Examining the acceptance infrastructure, the expansion of the number of POS terminals that are compatible with contactless technology is also notable, with almost 36%. This means, that 83% of the terminals offer this payment solution.

The value of purchases by card doesn't reach 50 thousand forints in the bulk of transactions, with contactless technology being the most prominent in low-value transactions. Examining the distribution of card purchases by amount, payments under 5 thousand forints make up 60% of the turnover. Within these low-value transactions of under 5 thousand forints at physical points of sale the proportion of contactless transactions is over 75%, with payments between 10 thousand and 50 thousand forints this method contributes to 56% of physical transactions. Also, data also shows that the use of cards plummets in the value range over 50 thousand forints.

The rapid advancement of electronic payments observed in Hungary in the past years could also be seen in a rise in the indicators measuring the rate of successful payment transactions. The Hungarian National Bank measures the level of development of the Hungarian payment system utilizing three indicators, which envelope the majority of significant areas of payments. As the continuous growth persisted in 2017 as well, the efficiency of local payment transactions came closer to the median of the European Union too.

Regarding credit transfers to GDP ratio, the Hungarian payment system is in the most advanced one third within Europe. The credit transfers to GDP ratio had the smallest increase, which exceeded the 2016 value in 2017. Also, the lag behind the average 17.7-fold ratio of the EU in this area is minor anyway. In contrast with the European nations, in

this field the state of advancement of the Hungarian payment system is more developed then that of the majority of EU Member States.
Digital payments are becoming increasingly commonplace in the case of retail purchases, with the main reason being the rapid spreading of payments by card, although there is still plenty of room for expansion. The value of the indicator regarding the digital payment of purchases elevated to a higher degree than in 2016, by 3.6%, which is primarily the result of the growing popularity of purchases by payment card. The 25% increase in card purchase turnover is mainly the result of the wide-spread use of the contactless technology, which is a quick and convenient alternative even in the case of low-value payments, where previously cash was used almost exclusively. The increase in the card purchase turnover, which is significant even in multinational comparison, at the same time means that in previous years the level of development in Hungary had been increasingly approaching the EU level, and in 2017 the value for Hungary reached two thirds of the EU average. Also, the comparison of the indicator for Hungary with other European countries means that there is still plenty of room for expansion in this sector, which means additional venture opportunities for Hungarian payment service providers too.
The conclusions that can be distilled from the OCR database results in a better understanding of the influencing factors that affect the use of cards.

The willingness to use cards increases in connection primarily with the value of the transaction, but it drops gradually above a certain limit. According to 2015–2016 OCR data, just as the size of shops, the value of transactions also shows a high number of low-value and a low number of high-value transactions. The value of 50% of the transactions is under 1000 forints and almost 70% of the transactions is under 3000 forints. As the proportion of card usage is much lower in the case of low-value transactions, and these transactions comprise the majority of turnover, the average card usage ratio is also low. The ratio of card usage increases steadily until 30 thousand forints, but after that it drops, and is rather low in instances of payments over 1 million forints. The particular reason for this fact is unknown, but it is probably due to major cash savings held in homes and being present as cash transactions in retail trade.

Card payment volumes are affected to a large extent by the volatile nature of cash payment. The card acceptance ratios in relation with value categories harbour major internal variety. For example, on average, 35% of transactions around 10 thousand forints are paid by card, although it is largely affected by the exact value. The rise in the number of banknotes and coins used for the payment largely increases the probability of card payment. This means that besides the value of payment, comfort-related aspects also have a

major effect on payments by card. Regardless of the influence of other factors, the probability of payment by card is six times greater in instances that require ten banknote or coins than in the case of purchases that can be paid with one banknote.
Card usage grew rapidly in Hungary in 2015 and 2016; based on the current trends, the European average will be reached in under ten years. Based on OCR data, card usage grew steadily during these two years. Including every payment transaction, the proportion of card payments grew from 20% to 25% but examining it at the turnover of points of sale, the ratio was between 30-35%.

Regarding bill payments, the advancement of recent times had a favourable effect on the turnover of electronic payment solutions, and in 2017, 44% of the bills were paid digitally. Notable developments of past years include the innovations implemented by the Hungarian Post and the establishment of mobile payment solutions, which gave the opportunity to make electronic payment possible in the case of bills. The digitalization of yellow and white cash in-payment money orders, which can be considered unique to Hungary, has a big impact on the catching up with the European average, and thus developments increased the proportion of digital payment of bills to a large extent. The yearly 3% percent growth reached in 2016 in the case of direct debits, which are also largely used for regular bill payments, remained significant in 2017 as well, thus also adding to the rapid increase in the value of the indicator. All these effects together meant around a 5% growth in the ratio of digital bill payments in contrast to 2016.

2.2 Banks in Hungary

2.2.1 Overview of banks in Hungary

The Magyar Nemzeti Bank is the central bank of the Republic of Hungary. Founded in 1924, the body is responsible for promoting the stability of the country's financial system and overseeing banks in Hungary. The Hungarian central bank is also a member of the European System of Central Banks, focusing on international relations and its participation in the professional forums of international economic institutions and financial organizations (EU, IMF, OECD, BIS).
The different types of banks in Hungary include:

- Commercial banks
- Branch offices of foreign banks
- Financial Institutions

The outlook of Moody's for Hungary's banking system is positive, as the rating agency believes that the country's improving economy will boost the loan quality of local banks and support moderate profitability, as capital buffers remain stable.

The top banks in Hungary are:

OTP Bank

OTP Bank, formerly National Saving Bank, was established in 1949. The bank offers commercial banking services in Hungary, Bulgaria, Russia, Ukraine, Croatia, Romania, Slovakia, Serbia, and Montenegro. It provides currency exchange, private banking, insurance, personal and mortgage loans, and Internet banking services.

Based out of Budapest, the bank manages a network of 1,302 branches and employs around 27,000 staff.

As of 2016, total assets of the bank were US$44.66 billion and net profit was US$800 million.

K&H Bank

Kereskedelmi és Hitelbank Zártkörűen Működő Részvénytársaság, also known as K&H Bank, was founded in 1987. The financial institution provides various banking products and services to retail, private, and corporate clients in Hungary. It offers a full range of financial products, including account management, investments, savings, loans, bank guarantees, bank card services, custody management, treasury, project financing, private banking services, as well as investment fund management, leasing, securities trading, factoring, and life and pension insurance.

Headquartered in Budapest, the bank maintains a 4,000-strong workforce and oversees a network of 207 branches.

As of 2016, the bank's total assets amounted to US$11.31 billion and net profit reached US$167.56 million.

Erste Bank

Established in 1819, one of the oldest banks in Hungary, Erste Bank offers a range of banking and other financial services to retail and corporate customers in Austria, Central and Eastern Europe, and in other parts of the world. The bank's operations comprise Retail, Corporates, Intragroup Elimination, Asset/Liability Management, Local Corporate Centre, Savings Banks, Group Markets, and Group Corporate Centre segments.

The bank operates through 2,648 branches in Austria, the Czech Republic, Slovakia, Romania, Hungary, Croatia, and Serbia. In 2016, it reported total assets of US$256 billion and a net profit of US$1557 million.

Budapest Bank

Budapest Bank was incorporated in 1987. The bank serves private individuals, business organizations, and corporate customers in Hungary. It offers credit and leasing facilities for the purchase of new and second-hand cars, and equipment financing through its network of 94 branches. It currently employs around 3,000 staff.

As of 2016, the bank's total assets were US$3.95 billion along with a net loss of US$47.36 million.

CIB Bank

Founded in 1979, CIB Bank provides retail and corporate banking services to companies, institutions, municipalities, private entrepreneurs, and retail customers in Hungary and other countries. With around 2,000 staff, the bank is headquartered in Budapest.

As of 2016, the bank's assets totalled US$6.43 billion and net profit amounted to US$47.23 million.

MKB Bank

Headquartered in Budapest City, MKB Bank was established in 1950. The bank operates through Corporate Banking and Institutional Banking segments and employs around 2,000 individuals.

In 2016, it posted total assets of US$8.304 billion and a net profit of US$37.51 million.

Raiffeisen Bank

Raiffeisen Bank was founded in 1986 as Unicbank. The bank comprises Retail and Private, Corporate, Bank and Treasury, and Other segments. With around 2,400 employees, it is headquartered in Budapest.

The bank serves individuals, corporations, governments, local municipalities, social institutions, and residual items. It offers lending and deposit-taking services, credit card loans, as well as loans provided against securities deposited as collateral. It also provides project and structured finance products, syndicated loans, bank card facilities, and various investment services. In addition, it also offers investment products, cash management, online factoring, legal and tax consultancy services, and payment, mobile banking, and Internet banking services.

As of 2016, total assets of the bank were US$7.88 billion and net profit was US$59.31 million.

UniCredit Bank

Established in 1990, UniCredit Bank offers various banking products and services to small and medium-sized enterprises, private customers, and large corporations in Hungary. It

operates through CIB, Retail, Private Banking, and Other segments. The bank serves 400,000 customers through a network of 55 branches. Based out of Budapest, it employs around 1,700 staff.
As of 2016, the bank's total assets amounted to US$10.81 billion and net profit reached US$212 million.

FHB Bank
Headquartered in Budapest, FHB Bank is the largest mortgage re-financer among banks in Hungary. The bank comprises Retail, Corporate, Investment Services, Treasury, Refinancing, and Other segments. Incorporated in 1997, there are around 1,000 employees in the company's workforce.
In 2016, the bank reported total assets of US$2.34 billion and a net loss of US$61.24 million.

BNP Paribas Bank
Founded in 1990, BNP Paribas Bank is one of the first joint-venture banks in Hungary. The bank offers institutional and corporate banking, securities, asset management, insurance, real estate, vehicle management, financial and operating leases, and real estate investment services for corporations and institutions.
Based out of Budapest, BNP Paribas became the sole shareholder in BNP Paribas, Hungary Branch, in 2001. (Corporate Finance Institute 2019.)

2.2.2 Digitalization of banks in Hungary

Many FinTech companies now provide banking services on handheld devices without the need for meeting clients in person. Similar applications are making their way into Hungary too.
In the past years people in the banking sector were cautious regarding the technological capabilities of the banking sector, not just in Hungary, but everywhere around the world. Those working in the banking world would have an eye on PayPal's online dashboard, comparing its handy and swift nature to traditional static online banking solutions from classic banks.
The situation has escalated ever since, tech startups with the potential to expand into tech unicorns, for example the financial technology company Revolut, are now offering a mobile application-based banking experience. Customers can open a bank account in literally a few minutes, including the application for an imprinted bank card, that you receive in a matter of days. Customers can manage their accounts within the application at the flick of a finger.

Banks in Hungary, - and also around the globe – are under pressure to keep up with the newest technological developments. To improve its agility and to meet its clients' needs, MKB initiated its digitalization process 4 years ago. Since then, they have made many innovations, replacing their core system, setting up their innovation lab (MKB FinTechLab) and introducing new digital solutions for clients, like online accounts and paper-free contracting. MKB's stance towards this rapidly changing environment is positive, considering it as a potential for improvement rather than a threat.
Banking solutions have improved a lot since the times when they were primarily internet browser dependent. Hungarian financial institutions now provide mobile banking applications, with a rapidly growing customer base.

UniCredit Bank has launched its native mobile app in Hungary in 2015 after a successful 'Family and Friends' internal testing period on multiple platforms. They reached 120,000 contracted clients as of December 2018, in the private individual sector alone. The recognition of the mobile app can be seen definitely after looking at two figures: more than 50% of their contracted clients use the app on a monthly basis, while 33% of their active client base uses it regularly on their phone.
Although there was a major shift towards digitalization in this sector, it does not mean physical branches have vanished. For example, at CIB Bank branches are increasingly shaping into locations for advisory services, and at the same time an increasing number of financial transactions are redirected into digital channels, even though clients still occasionally prefer to visit branches on things that they could actually handle online, as they go for professional support and help. Staff members working in branches still have an important role when interacting with clients: they may help customers to get to know unique features within an application, like applying for a personal loan with payment as fast as 7 minutes.

Besides going online, Budapest Bank puts a significant emphasis on the user experience. The bank launched its online application in two years ago and it has generated so good ratings that it became the second-best banking app on iOS and Android alike. Last year two new services were presented: a contactless mobile payment service was introduced, and they also introduced the payment of yellow and white postal checks by scanning the QR code, as the first bank in Hungary to do so. Innovative solutions were also introduced to the app in 2019, and others are planned for upcoming months.

In order to become up-to-date OTP Bank has initiated a complete Digital Transformation Program for a seamless transition to electronic services, as well as making processes more user-friendly. Since 2015 OTP Bank has executed many digital projects, like an

overhaul of its mobile banking services and the introduction of online cash loans, which now make up about 20% of new loans. As of now, over a million Hungarian users use online banking and over 400,000 have adopted mobile banking.
Although Hungarians are relatively digitally literate, the market is not always clear cut, and it's occasionally difficult to predict trends.
Hungarians tend to be early adopters on some occasions regarding technology. For example, contactless bank cards quickly became widespread within the Hungarian client base but based on MNB data the amount of physical cash is at a record level of more than 6 trillion HUF, that also shows that it is hard to predict the adoption rate of FinTech solutions in the country.

Convenient digital solutions create a comfortable environment for users. Most banks agree, that the requirements of customers must be the most important aspect to focus on for banks, regardless of the interface (digital or brick-and-mortar). The complexity of the situation and the personality of the customer determines whether their needs are to be solved in the digital space or not. Since people do not like waiting for prolonged periods, in some cases, especially in complex advisory services customers prefer personal assistance.
According to OTP it is also critical, that banks do not abandon their physical branch network, since personal contact with clients is still of significance and professional face-to-face advisory processes are still very important.

2.3 Pricing level of payment services in Hungary

2.3.1 Cost recovery and pricing of payment services

A developed up-to-date payment system is fundamental for bolstering domestic and international trade and exchange as well as expanding financial markets. Payment clients will be encouraged to gravitate towards the most potent payment methods if the value of producing those services are returned in the prices paid.
There is a waste of resources in the U.S. due to the fact, that purchasers tend not to differentiate between the transaction prices or bank costs of using a check or using electronic direct debit when paying a bill, which is rather queer, since the social costs of these two instruments are different. Digital payments cost about one third of those of traditional cash payments. Approximately 100 billion USD is going to waste because of the continued use of paper-based checks. In cases where payment instruments are not priced properly, the costs must be compensated in other places.
One typical solution is to utilize loan dividends to compensate a portion of the payment expenses. When prices echo the full cost of creating a service, clients insist on services that

use fewer real resources. There are instances of payment prices and price schedules, that present how cost data in the background is utilized to establish a price. They set the groundwork to how payment services are best constructed to: a) Realistically represent economies of scale or scope in the creation of payment services; b) Adapt cost recovery proportions to sustain how much demand habitualities associated with start-up compare to those in connection with mature operation. (During a new system's first years of operation, the transaction volume might be low in some cases and some kind of under recovery of costs may be needed to boost the use of the system. Under recoveries like this must be integrated into future pricing schemes after the systems are established and traffic volumes are at a level where full cost recovery is practical.) (Worldbank 2019. Cost recovery and pricing of payments)

2.3.2 Pricing in Hungary

According to the National Bank of Hungary (MNB) local banks may benefit from integrating the international way of package pricing into retail payment services. The costs of retail payment services in Hungary are rather high when taking other countries into account, with a 0.52% of an average client's income. That ratio is well over the 0.36% average for retail bank customers in Eastern Europe, and also over the 0.16% average for Western Europe.

Retail bank clients in Hungary usually pay transaction fees that are adjusted to transaction amount and recurrence, in contrast with most countries where clients pay a flat price in accordance with the account package they have.
Integrating package pricing into the Hungarian system would inspire a further increase in digital payments according to MNB, with a good chance of banks forgoing transaction fees of instant credit transfers, considering customers' high costs. The resulting boost in a competitive edge would be good for banks far more in the medium term than any negative factor from decreasing payment revenue.
Also, a universally available package pricing, together with forgone transaction fees, would also enhance the Hungarian people's financial shrewdness with the resulting transparency and comparability of banking products. (Budapest Business Journal 2019)

3 Practical interpretation of statistics and data

In this chapter the research is going through the investigative questions as follow:

1. RQ: How do Payment Service Processors enter Hungary?
2. IQ 1: What is the maturity of digital based payment services in Hungary?
3. IQ 2: What could be the ten biggest banks to target as customer conversion?
4. IQ 3: What is the current pricing level for payment services and how do they compare to other European countries?

Both qualitative and quantitative research was used in order to deliver the content for this chapter as it is heavily founded on the statistical data gathered by the corresponding central banks.

The following table consist of the crucial elements that aided the study and it is structured the same way as the theoretical framework's chapter which closely correlates with this one.

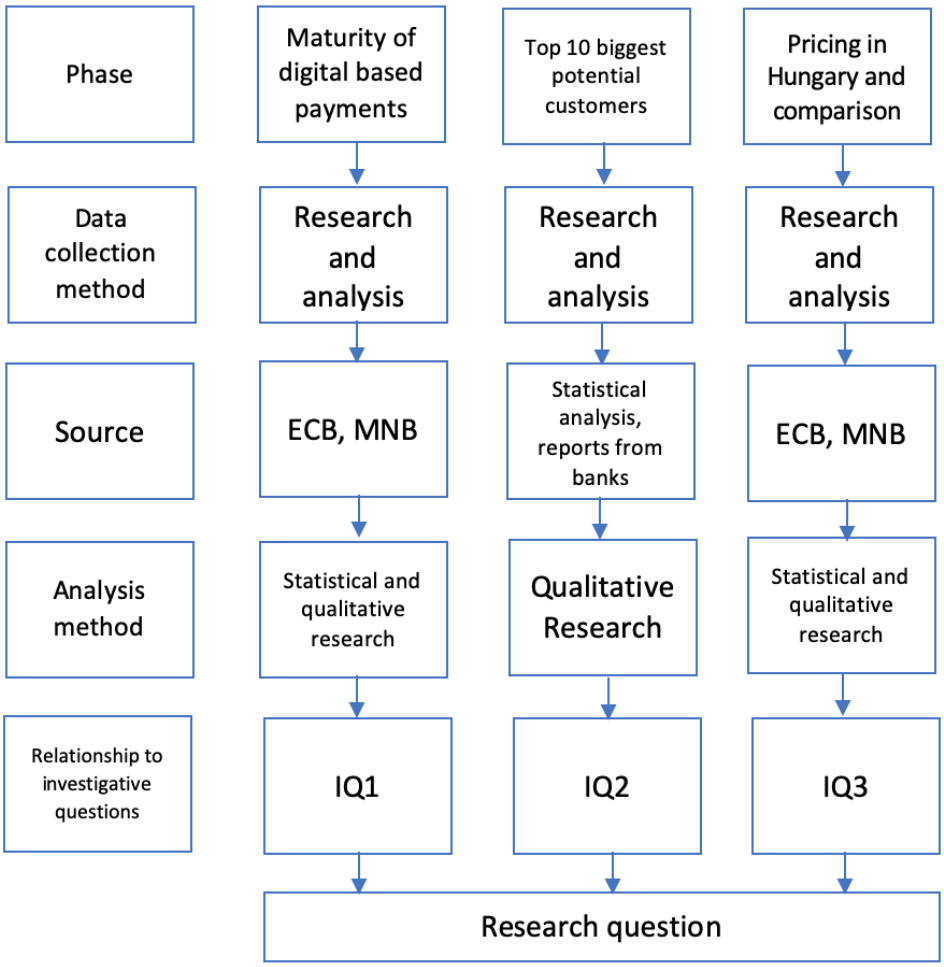

Table 2. Research methods

3.1 Cash to digital conversion

In the following the key research areas will be elaborated in practice about the maturity of payments in Hungary. The data collected for the analysis was mostly obtained from the Hungarian National Bank and the European Central Bank's statistic institution.

Cash has been circulating in the economy for centuries. It is the symbol of one's contributed value to the economy as a payment for the efforts, an exchange for the time. As it has been with humankind for a fairly long time, it is hard to get rid of it from today's society within a short timeframe, therefore governments are trying to enforce cashless solutions and strategy, which solutions differ from country to country.

Currently the trend is that all the developing and developed countries are changing from cash to digital payment methods, which will eventually lead to a cheaper artificial circulation, as printing and maintaining the quality of cash takes significant effort moneywise from the central banks. Certainly, cash is not likely to disappear in the next decades, but it will be used less and less as the digital infrastructure will be available for people in the less frequently inhabited, even rural areas.

Hungary is in a special situation at the moment of transition. As we speak, by the end of 2019 Visa and Mastercard is creating a new hub in the country to launch new products from there to the Balkan and to the eastern parts of Europe. The reason for them is the fast transitioning population which starts to put trust into digital payment solutions and which is starting to be more and more reliant on card payments, which begins to show signs of competitive figures with countries possessing much more advanced digital infrastructure, such as Denmark, Sweden and Finland.

Hungary's population stands on 9.8 million, Sweden's 10.2 million, Finland's 5.5 million and Denmark's 5.8 million by the end of 2018.

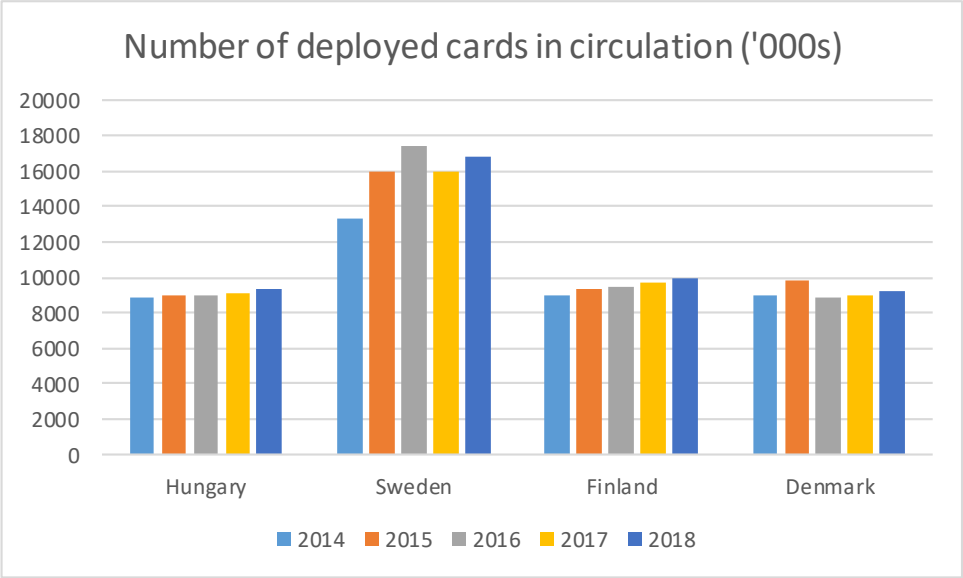

Figure 2. Number of deployed cards in circulation (ECB Payment statistics)

These figures are very important because it shows the reader the difference between two rather similar populated countries (Sweden – Hungary) where the amount of cards in Sweden is almost double compared to any other countries in the investigated countries. The slight decrease in 2017 was due to the inactivity of certain debit and credit cards which later would be terminated from the system, but overall it did not stop the increase for the Swedish user base.

Hungary is on a steady growth, but in Denmark and Finland where population is roughly 60% of Hungary's, the number of cards is about the same. This is partly due to the lesser confidence in digital payment systems and also due to the grey economy which allows people to pay with cash in many shops, occasionally without receiving a receipt of purchase. The Hungarian Tax and Customs is collaborating with merchandisers and general shopkeepers to whiten the economy by installing the so-called e-tills or online cash registers, where the seller must have active, live internet connection which transmits the created receipt straight to the tax office and where most of the times digitalized payment options are at the ready. By having mobile POS terminals, payment with supported devices will be much easier and more convenient for the ever-growing number of card users in Hungary, even in the countryside.

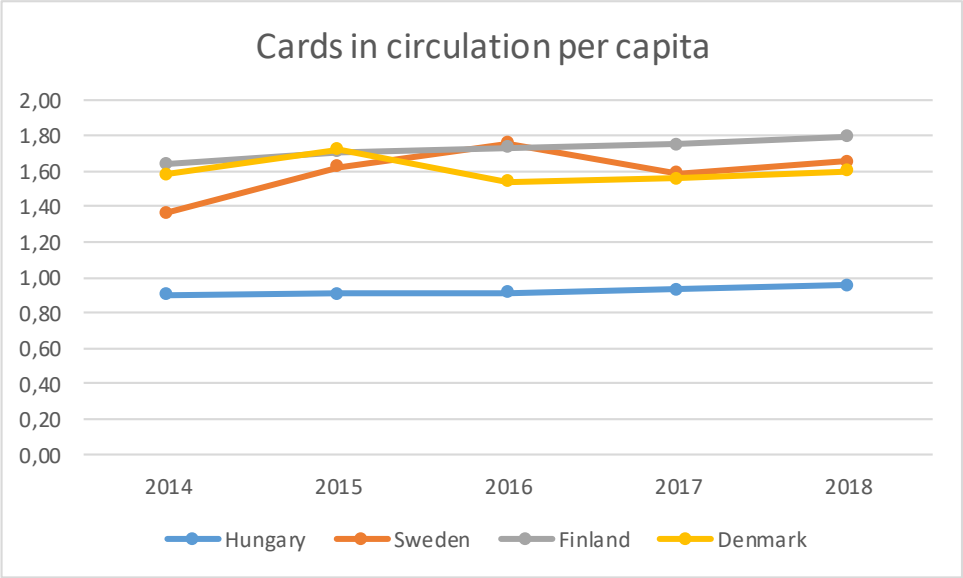

Figure 3. Cards in circulation per capita (ECB Payment statistics)

The above pictured figure is stating the card distribution among the population from 2014 to 2018. Hungary's card numbers almost equal the population in 2018 by 0.96 , which is 0.06 points change from 2014. Finland, Sweden and Denmark are going hand in hand where Finland is leading with 1.79 at the end of 2019, Sweden coming as second with 1.66 and Denmark as third with 1.60. The fact that Nordic countries are above the 1.0 index does not mean that everybody has a card, but it is likely that some has more than one (two – three) and some does not have any (theoretically very few).

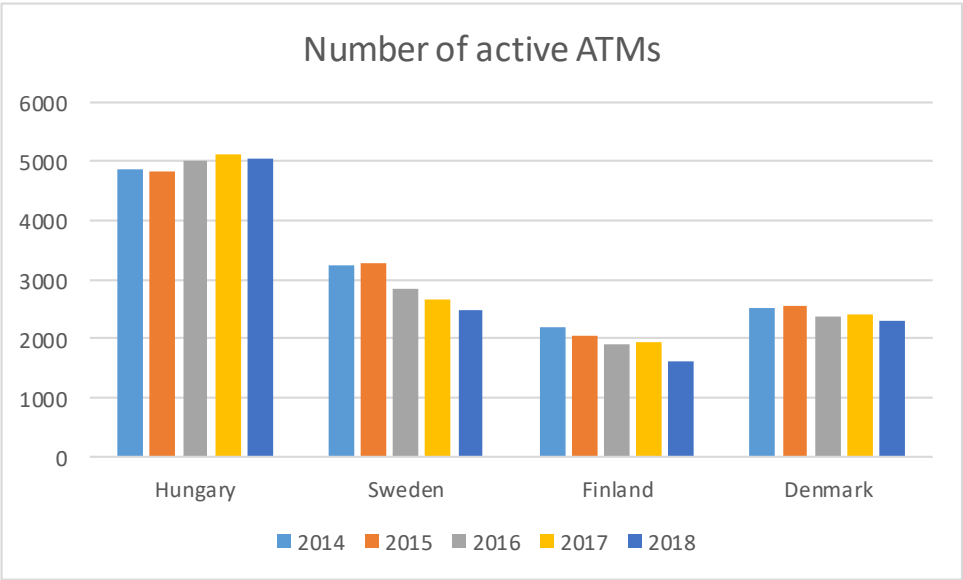

Figure 4. Number of active ATMs in Hungary (ECB Payment statistics)

ATM (Automated Teller Machine) wise Hungary has more than 5000 units installed all over the country. This is due to the fact that companies realised that there is a huge cash withdrawal power in Hungary and demand for such increased in recent times despite of trends in other countries. In normal condition, up to two cash withdrawals altogether up to 150'000 forints is allowed free of charge from one's own bank account. After that consumer has to pay either a fixed rate depending on the account the cardholder possesses or dynamic rate depending on how much cash the customer would like to withdraw. In Budapest for instance if a person would like to go to the entertainment quarter, there would be an (occasionally two) ATM in every corner.

The bank-independent ATMs target mostly tourists who are offered to withdraw either Euro or Hungarian Forint, where they have the possibility to get and start to use the local currency within clicks of transmission, instead of finding the best rates at a local currency exchange. In 2015, Sweden had over 3000 ATMs in the country which by now decreased to a little more than 2500. This also shows that by the digitalization and penetration of digital payment opportunities the demand plummeted for cash on-hand, therefore the processors terminated significant, over 20% of the existing machines. In Finland the same tendency is visible just as steep as with Sweden, where Denmark's trend is showing change towards a reduction but slower than in the other parties. It is somewhat surprising though that Denmark is having so many ATM still running, but there is a significant importance of cultural impact on the use of cash, hence having over 2300 active machines countrywide.

It is still hard to tell how Hungary is going to react on the trend change in the Nordic countries, but there is already a slight decrease over the active machines. Since the country is open for the FinTech revolution and the Hungarian government is giving aid on the transition, it is likely that the ATM number is going to decline significantly over the next couple of years, but certainly won't disappear in the near future. Sweden can be an example for the country to follow and hopefully this change will happen as sharp as there.

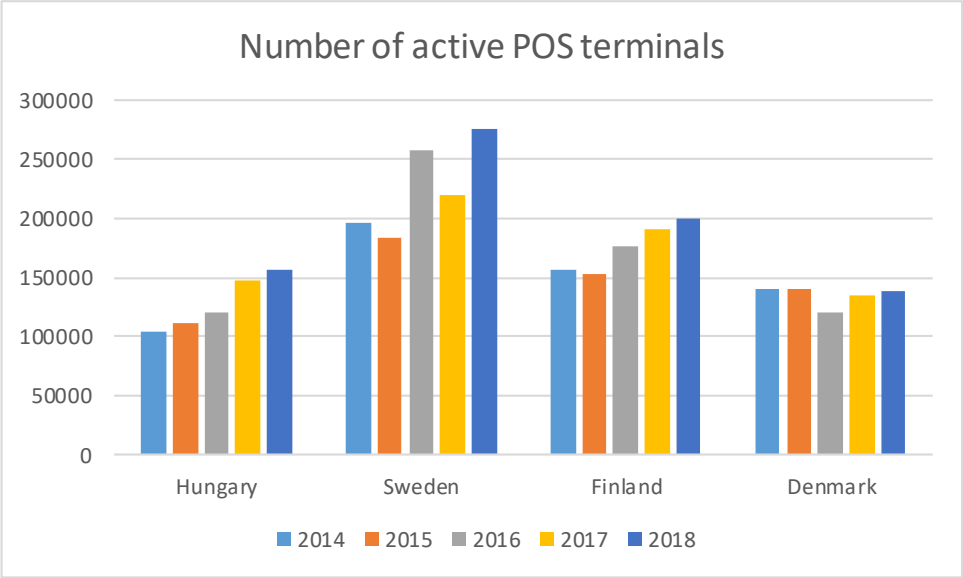

Figure 5. Number of active POS terminals (ECB Payment statistics)

The last comparison in this section between the countries is the number of active POS terminals. Since POS terminals are responsible for the day-to-day purchases from merchandisers, it is important that these are not only supporting all the available payment methods but also create an effortless solution where the transferred funds are securely taken care of. The demand is changing now rapidly to multifunctional way of using these devices, such transforming merchandisers' own tablet or phone into a payment terminal.

Sweden stands out of the pack with having over 275 thousand active devices in circulation in 2018, which offers instant payment method for purchasing goods. The country experienced decrease twice in the last five years, which was mostly a statistic plummet only, as in 2015 and 2017 some of the payment devices were not used, which means in practice that merchandisers licensed ten terminals but used only seven or eight of them.

Every POS has a unique register number which allows the central bank to track the transactions and monitor them constantly. Denmark has a stable number of devices installed standing little below 140 thousand which number can increase in the coming years when we compare it to Finland where the 2018 number had passed 200 thousand. Hungary started the change in 2014. That time the number of devices was 105 thousand. By the end of 2018 this grew to 155 thousand which is almost 50% increase. The shape of figures indicates an exponential growth in the market coverage and with this the country will catch up with the members of the Nordic countries. Sweden's numbers are still roughly double as Hungary's but if Hungary keeps up the surge, in two years it can reach Sweden's 2014 level and in seven to eight years the current total.

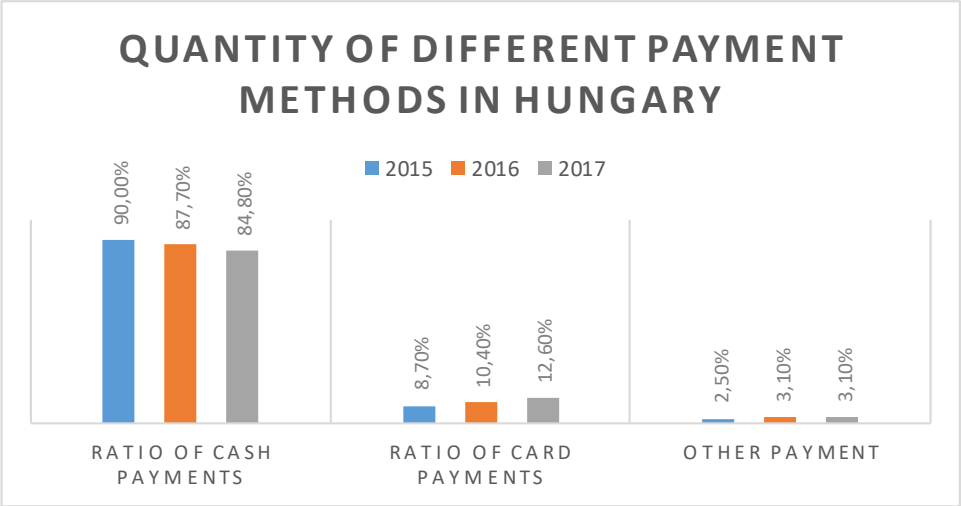

Figure 6. Quantity ratio of different payment methods in Hungary (MNB Annual Report)

The above figures are responsible to show the quantity of different payment methods in Hungary. The numbers were listed in the annual report of the Hungarian Central Bank. In 2015 the number of payment transactions done was 3.63 billion, which increased to 3.82 billion by 2017. This shows clearly that vast majority of payment actions are still carried out via cash as in 2014 this figure was 90 percent of all the transaction made. The development of digital payment trend is then later visible as cash payments lost territory by 5.2% standing on 84.8% by the end of 2017.

If the trend continues this way, the average change will be 2-3 percent annum, which means that unless there is artificial impact on the users engaging with regular cash payments, the cash ratio will balance digital payments in 10-13 years. These figures correlate with the use of digital terminals and the dependency on cash from other charts as previously elaborated. The cash, card payment and other payment sum can sum up occasionally over 100 percent as certain good and services were cleared out using more than one payment method increasing partial percentage of payment options.

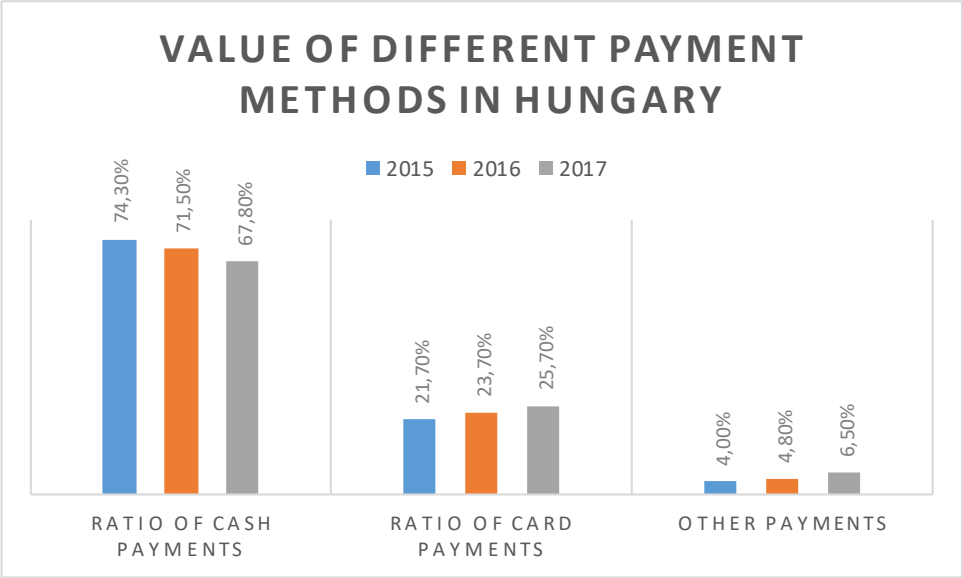

Figure 7. Value of different payment methods in Hungary (MNB Annual Report)

Value wise we get a significantly better view in favour for digital payments. Where in 2015 74.3 percent of all transaction value was cleared by cash, this number changed to 67.8 percent by 2017. In the case of card payments, it stood on 21.7 percent in 2015 which increased to 25.7 percent by the end of 2017.

In the case of other payments, the change was 2.5% within that timeframe. Where in 2015 the total transaction value was 9'134 billion Hungarian forints, that went up by over 20%by 2017 resulting a sum 11'011 billion Hungarian forint. Considering the figures show total values cleared in the system, the percentages add up 100%. As cash payments plummeted within the period by 6.5% and card payments value went up by 4%, there is a possibility that within this linear trend, there will be an equilibrium in roughly eight to ten years.

3.2 Hungarian banks in practice

Hungary had 35 different banks at the end of 2018 where the top 10 banks based on the most owned branches consisted altogether 1794 spots countrywide. This figure is a cutback from the 2017 numbers which had counted well over 2300 branches. The reason for the plummet is the changing trend of how citizens are dealing with everyday banking life so certain countryside branches would be closed and existing could be staffed better in order to deliver customer centric service on a daily basis if somebody needs face to face meetings in case of a loan, mortgage or other security, verification required processes.

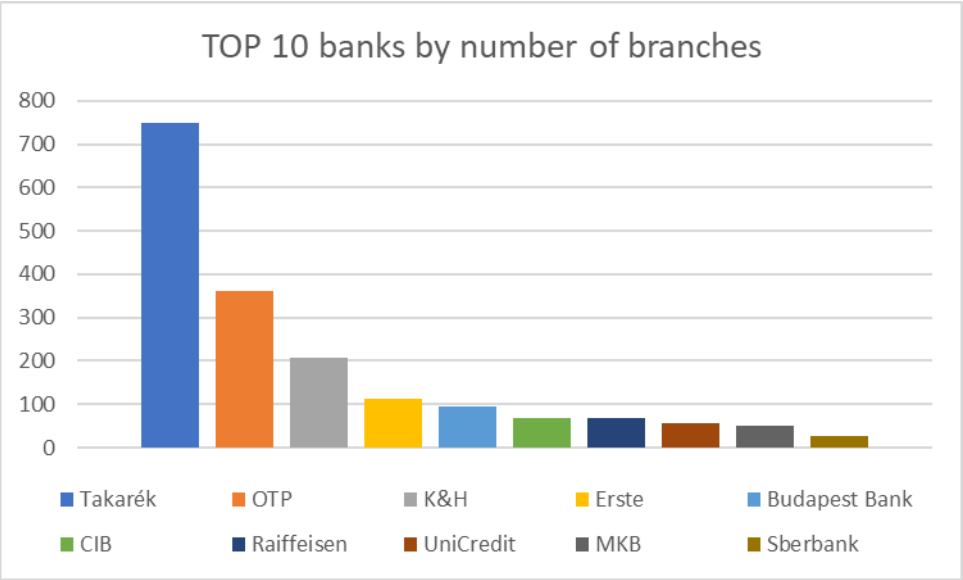

Figure 8. Top 10 banks by number of branches (Portfolio.hu, 2019)

Takarék and Sberbank was not listed beforehand in the theoretical part as that focused on the biggest banks by asset. When it comes to retail banking, the top ten lists the before mentioned two as well. OTP as the biggest (by asset) and most powerful bank in Hungary which is aggressively expanding with towards the Baltic countries and bought many of the region's banking entities in Albania, Croatian, Bulgaria, Romania and in other related countries. Takarék's situation is interesting considering the massive merger of all the saving institutions countrywide to become one group. This resulted 750 branches in the country where the CEO claims, there would be a decrease over the coming years to 500. OTP had 362 branches, K&H 207, Erste 112, Budapest Bank 95, CIB 68, Raiffeisen 67, UniCredit 55, MKB 51 and Sberbank stands as last with 27. (Portfolio 2019)

Erste was among the first to enlist Fintech companies to receive aid in the new era of banking. The so-called Day One Capital Bankspiration introduced five new Fintech solutions which are as follows:

Minna Technologies: through the open interface of the bank, the service can provide data about the number of subscriptions the client has, can handle all of them from one platform therefore change and termination will be more convenient than ever.
Flybit: benefits the clients with artificial algorithms that tailor offers according to the user's background and helps to analyse data models based on geo-localisation.
Paykey: connects social media platforms, mostly chatting services with banks to utilize payment transfer solutions and to be able to send funds to accounts or wallets, depending on the preference.

Cantab PI: also provides artificial intelligence based tailored solutions which bases its data collection analysis on the bank's data supply.
Vintom: specialised in video communication, the service provides effective communication in cross-marketing in order to deliver client-tailored services and up-sales. (Portfolio 2019)

3.3 Pricing – Behind the scenes of banking services

The costs that affect money trafficking are directly influencing customers' payment habits. Pricing has a significant role in use of electronic methods as well as in retaining the use of cash and helps to prevent tax evasion and the fight against the black economy.

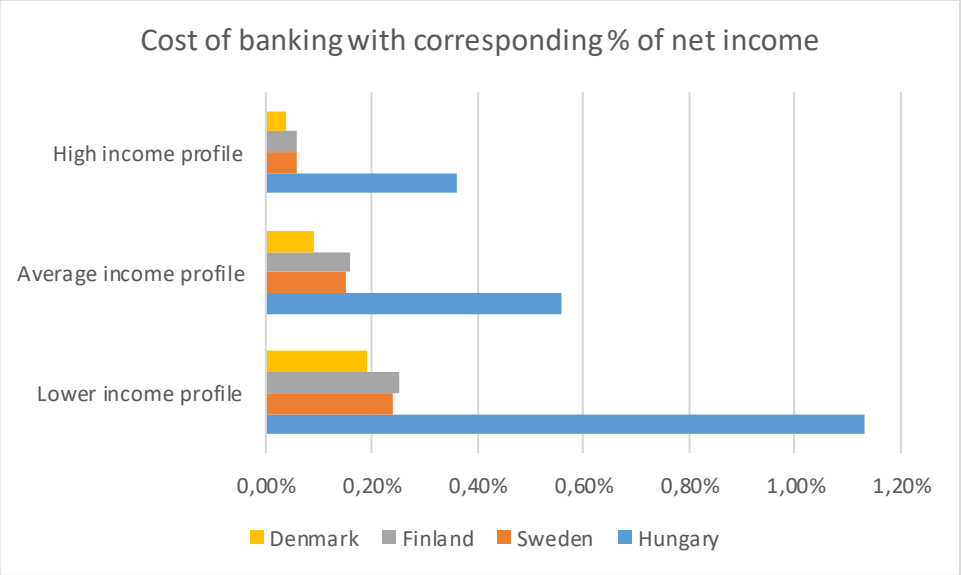

Figure 9. Cost of banking with corresponding % of net income (MNB money traffic pricing report)

Three components affect the pricing to be this drastic in the Hungarian banking ecosystem. The irrational extra fee starting from minimum transactions, which might be multiple times the amount one would like to send, the increased fees on larger sum transfers and the general fees on normal transfers with surcharge which is collected by the MNB at the end of financial years.

In Hungary, the monthly fees that are attached to banking is equalling 1.13%, where in Sweden this percentage is only 0.24%, 0.25% in Finland and 0.19% in Demark among the lowest earning population.

The costs for the average earning people change as follows: 0.56% in Hungary, 0.15% in Sweden, 0.16% in Finland and 0.09% in Denmark. The interpretation is that as the income in Hungary is increasing the costs are going to have less impact on it as it gets closer to

the Nordic wide salaries. Still, it costs for people at least 3.5 times more to bank in Hungary than in the other inspected countries.

Lastly, the high-income profile percentage is stated to be 0.36% in Hungary, 0.06% in Sweden, 0.06% in Finland and 0.04% in Denmark. Here the gap widened again in pricing to be six times more in Hungary than anywhere else.

The prices are soaring up because clients must pay their transfers mostly on an individual basis. At the moment, despite of the Hungarian Central Bank's efforts, only 19% of the offers consist of package-based pricing. Package pricing helps people to eliminate unexpected monthly costs and creates an opportunity to unlimited digital transfers, soon instantly.

	Low income profile	Average income profile	High level income
All costs (HUF)	1204	1496	2357
All relative costs (%)	1,31 %	0,70 %	0,44 %
Corresponding income (HUF)	91 908 HUF	213 714 HUF	535 682 HUF
Corresponding income (EUR)	276,37 €	642,63 €	1 610,78 €
Card fees	640 HUF	640 HUF	1 074 HUF
Account fees	399,00 HUF	323,00 HUF	350,00 HUF
Transfer fees	165,00 HUF	474,00 HUF	850,00 HUF
Collections	- HUF	59,00 HUF	84,00 HUF
Withdrawal at own ATM	- HUF	- HUF	- HUF
Cooresponding fees (EUR)			
Card fees	1,92 €	1,92 €	3,23 €
Account fees	1,20 €	0,97 €	1,05 €
Transfer fees	0,50 €	1,43 €	2,56 €
Collections	- €	0,18 €	0,25 €
Withdrawal at own ATM	- €	- €	- €
All costs (EUR)	3,62 €	4,50 €	7,09 €

Figure 10. Hungary's banking costs in correspondence with net income (MNB Annual Report, 2019. *EURHUF rate based on 7th November MNB average. EUR = 332.56 HUF)

The table shows the distribution of the costs with the added surcharge; therefore, the percentage take is slightly higher than in the previous table. This also provides the data elements with the consideration of income levels and their correlation to the ever-increasing prices. The fees are shown in Hungarian forint and Euro as well, so the reader gets a clear understanding from a Euro perspective too, how much is the charge and income in the surveyed environment. The withdrawals are stated as 0 euro in all the tables as it is expected that the general demand for cash would not soar above two times a month and not above 150 thousand forints together as that is the limit for free cash withdrawal from one's own bank's ATM.

People on low income, roughly on the national minimum wage need to pay 1204 forints for banking per month. The card usage fee takes most of the weight on itself with 640 forints, where the account fee is 399 forints. The person would like to make some transfers as well, one or two a month, that will cost 165 forints. Overall, this ends up being 3.62 euros.

On the average income level, the sum is 1496 forints which is 0.70% of the actual net income. The card usage fee stays the same on 640 forints and account fee decreases to 323 forints. Transfer fees triple to be 474 forints per month and collection fees apply as well with a sum of 59 forints. 1496 forints equals 4.50 euros on recent exchange rates.

High level income experiences slight changes in the table as card fees change to 1074 forints and account fee soars to 350 forints. Transfer fee almost doubles to 850 forints and collection fee sees also an increase to 84 forints which sum adds up to be 2357 forints which is exchanged for 7.09 euros.

It is clearly visible that the Hungarian pricing system is five to six time more expensive than in the Nordic countries when pricing is compared to the net income, but net income is not equally distributed among the countries of the European Union therefore additional analysis is required to measure the pricing level within the country. Purchasing power parity can be calculated if there was one product that was available in all the inspected countries. It is enough if the comparison is between two countries, Hungary and Finland to understand the concept. By the theory of Big Mac Index, one has to compare the prices of a McDonald's Big Mac sandwich in both countries in order to interpret valuation between the two representative currencies. The calculation goes as follows:

The price of a Big Mac in Hungary is 850 forints in 2019. This needs to be divided with the EURHUF rate on the previously mentioned 332.56HUF/EUR, which means that according to euro pricing it costs 2.56 euros to buy a Big Mac in Hungary. Then the 850 forints worth price needs to be divided by the 4.95 euros Finnish price which will equal 171.72 forints. This means that according to the theory, the forint's rate against the euro should be 171.72HUF/EUR. To get a better understanding on the currency valuation and perceive the under or over valuation of the forint, the 332.56 exchange rate needs to be subtracted from the calculated 177.72 forint (177.72-332.56) and divided by the actual rate of 332.56 which would equal by straight percentage conversion -48%. This means that the forint is greatly undervalued against the purchasing power of the euro, based on the pricing of a product that is consistently similar in all countries. The price of the product is also influenced by the local prices that provide the ingredients for creation where exchange rates

do not play a role as it does not contain import ingredients. However, the index cannot be used effectively in areas where the exchange rate plays a significant role in determining the price of a product.

This correlates with the cost of living index as well which is 72.18 in Finland and 41.70 in Hungary (Numbeo 2019.). The difference between the two countries is 57.8%. One would ask that how is it possible that in a country where purchasing power is lower, is still significantly more expensive than in any other countries when it comes to banking. The solution is found within the banking culture. For a very long time, banks were in monopole situation and there was no entity such as neo-banks that would threaten their existence. This also meant that people did not have other choice but to choose one of the banks in the Hungarian banking eco-system and stick by it. With the now going trends, a completely new pricing strategy will have to take place of the old one resulting some banks to turn their long-existing pricing policy completely around.

4 Discussion

4.1 Digital advantage

Now it is clear that Hungary is on a steady growth and some of the payment giants such as Visa and Mastercard has recognized this. With the ever-increasing number of cardholders, the country is becoming a good investment and spreading opportunity as significant portion of value is still cleared and transferred via cash. This transition will aid the expansion in the coming years as banks are in a solid need to outsource a large portion of their service portfolio to keep existing customers on board. There are certain other governmental collaborations where processing and security is needed, which by the local or regional competitors cannot be provided. As said before, the mass installation of POS terminals is aiding the next gear access to digital payments, but still, twice as many POSs are needed to cover the number of already installed online cash registers/e-tills which are overseen by the tax authorities, therefore we can say that there are a potential 140 thousand machines missing from the eco system.

The demand for cash is going to decrease greatly in the coming years meaning that less and less ATMs will operate on the streets of Hungary. When the pensioners will be convinced to use their bank accounts and open for those who do not own one yet, then pensions will be transferred to the accounts ensuring safety and less cash circulating in the economy.

The age of instant payment is imminent as GIRO is implementing the service with the collaboration of Nets. After the banks will connect to the common interface and meet the criteria which is required to execute the real-time instant transactions, the project will come alive and merchants and people is general will be able to send funds to each other 24/7 immediately. From a card management position, cardholders will have more than one card in their wallets or at home attached to their e-wallets and those accounts will supply funds for the neo-bank accounts which are going to add extra payment services to the users' phone, tablet and smartwatch. With the now active central infrastructure system provided by GIRO, it is safe to say that a payment service processor can easily connect to the framework, therefore entering the market from a client foundation perspective and based on the number of reachable customers has never held more potential before.

4.2 The potential of future customers

During the process when a payment service processor enters a country and targets a bank, the PSP has to make a research not just about the country and its background with the banks within, but also what are the key points that it can offer for the struggling banks. CIB Bank is dealing mostly with retail banking in Hungary. The bank developed a phone

application and a web platform as well, so that users could get access to their everyday finance the most convenient way. In the last twelve months, it was a well discussed topic that the bank was having errors in its system continuously, which resulted clients not to be able to use the app nor be able to pay with their cards at POS terminals or execute transfers. Some Hungarian clients changed bank; therefore, the result of constant troubleshooting was client migration. MNB vice-president, Márton Nagy stated, that instead of having 35 different banks in Hungary, the population would require only five but universal ones. This also means that the selection in competition is ongoing and soon many banks will need to merge or leave the country and strengthen their positions, where it is still possible. On the long term, there is no such as ten banks that a payment service processor can choose, unless they choose partners for couple of years only, for example for data migration and some other projects. The solutions what PSPs offer need to tackle the issue straight and start the negotiations as soon as possible. The fact about banks is that they never tell whether they deal with everything in-house or outsource, and if they outsource, who is the provider. It is a tough game, but it is not walking in the dark, because all payment service processors are aware of their own core competitive attributes. OTP will stay alive as it is a government interest to keep it healthy as a symbol of prosperity. The smaller Hungarian banks will likely to merge together just the same way as the savings banks did and formed a group, and banks which have strong influence in the region such as Erste and Raiffeisen will keep their presence in the country. There will be a competition between Sberbank and UniCredit as well, but at this point it is probable that CIB will fall among the first of the giants if they do not develop their system.

4.3 Pricing indication

Hungary is one of the most expensive countries in the region when pricing is being investigated. As the dataset provided, currently the majority of transfers are being done with individual pricing, hence occurs a hefty income from these by the end of each financial year. The president of the MNB had stated that the central committee is inspecting the current trends and neighbouring countries, how the amount of transfer could be increased even further and how to decrease the price of transfers on an overall basis.
The conclusion was that as other European countries such as Denmark, Sweden, Finland, and the United Kingdom's banking entities are providing package-based pricing for transfers, that would mean a completely transparent, accountable, fixed rate for companies and could also increase the progression of spreading, as well as the quantity executed. In the case of retail banking, the central bank's strategy is to ensure the possibility for all retail customers the free unlimited use of instant fund transfer system by paying only the monthly account fee which differs per bank. Certainly, generally set account fees cannot be established by the central bank as the free market conditions and competition is driving

the prices down in this sector anyways, therefore banks located in the country need to be vigilant with the coming Fintech firms offering instant solutions for fragments of their prices.

This the right moment for payment service processors to enter Hungary and its region as most of the banks located within are suffering from the old and costly systems which disallow the possibility of decreasing the costs and therefore the prices, that users have to pay. As payment service processors have sufficient tools and infrastructural solutions, a collaboration with a bank could engage with a large customer conversion within a short timeframe. This also means that banks would fall from a portion of their income, but at the same time the possible exposure of damage could be mitigated if not solved.

Cash withdrawal fees will not be decreased over time, but only escalate as it is the common goal to be less and less dependent on cash. Security and card management fees will likely to go up in the coming years as well, but the average cost of account fee will stay the same at least for a time or fall, since competitors such as Revolut is only “a banking licence away” from being a legitimate bank with legally trusted background which offers 0€ monthly fee for a standard account and offers trading solutions for free (limited times per timeframe) and other, cheap but prosperous solutions to its customers. Interest rates had been cut by the central banks in Europe and this direction will continue in Hungary in the future as well, which figure might reach negative rate, suggests the MNB, thus will banks fall from one of their biggest revenue portions, lending. The equation can be solved only, so that banks keep their presence in the country, by developing their infrastructure immediately by outsourcing some of their service portfolio to payment service processors, so even if pricing for services will decrease, they can remain greatly profitable with the ever-increasing customer base, and PSPs can take their share too.

4.4 Improvement suggestions for PSPs entering Hungary

Currently the biggest issue is that PSPs are serving banks that possess the classical structure: physical branch, old fashioned customer service and customer identification protocol, which are slower, and essentially not the most convenient for the clients. As the neo-banks take more and more overlapping control on the customer base, the banks are forced to make changes and since internally it is an unlikely scenario due to the high costs, they will need to outsource more and more of the services and keep only the specific core solutions that can be done in-house. This is a good opportunity for PSPs to take advantage and offer safer, more reliable, faster and cheaper support.

In South Korea the latest entry of the neo-bank, Kakao bank started up as a social media platform (Kakao Talk) just like WeChat in China. In two years after the launch in the country of fifty million, the platform has 10 million enrolled users with an operating income of

6.6 billion Won. The secret was to offer personally tailored financial solutions to people using the application, cheap online opportunity to execute requests, and the bank pays 2% interest on the deposits instead of the 0.2-0.9% country average. The conclusion is that PSPs must be aware of not only the European landscape, but of worldwide intel too and they should offer more and more financial solutions to banks and even neo-banks with additional mergers to become sole providers in a specific region. Flexibility is keen, therefore exploring new tech segments is more crucial than ever before. Recommendable that besides financial activities, PSPs could enter Healthtech as to provide real time processing between hospitals, doctors (GPs) and smarts watches and be an intermediator to make people's life easier and better, as the Fintech sector is getting tighter than ever. Hungary lacks card-based payment processing in public transport, as the latest design (Rigó) failed; in parking services and in accessibility in school, university and city-based services.

4.5 What is the future of digital payments

People will pay completely differently in the coming decades than before. Going into a store and choosing one's favourite basket of goods will be predetermined by consumer algorithms, which can also be changed remotely via phone applications. The chosen store will identify the customer, recognize the products the consumer takes from the shelves and by the time it goes through the door, all goods' value will be credited from the current account. Physical card payments will be disappearing, but it doesn't mean that PSPs are not going to have more job and tasks to do in the future. It is not always the latest tech implementations, but the reliable and affordable services that are increasing satisfactory for end users.

The disappearance of cash will have an impact on poorer societies where those with handicapped background cannot afford certain services and won't be able to pay in stores as others. Although the Nordics have progressive taxation, thus resulting distribution of wealth, the segregation from modern technology is still a problem. In Central Europe, in such country as Hungary where pension is sent rather via cash than transferred to accounts as most pensioners do not possess current account, cash is still king. Central banks and Fintech companies believe that during those times when digital payments are disabled due to cyber-attacks or other security issues, there needs to be a parallel payment option such as cash, therefore as summarised before, cash won't disappear completely from the economy, but will have lesser impact on it than before.

4.6 Reliability of the sources used

The material used for this research has been openly provided by the National Bank of Hungary and the European Central Bank after gathering information from transaction and service feedback from banks and Point of Sale terminals, furthermore from banks that released their service and customer portfolio online, therefore these are legitimate and centrally approved research bases. The definitions and short elaborations of specific terminologies were obtained from trusted websites which are supporting the life of hundreds of thousands of young and experienced professionals worldwide. Due to the rapid change and possible outdated research books in the field, it was difficult to rely on academic writing, because there's only few or insufficient ones that could have supported the agenda of this writing.

4.7 Evaluation of the thesis process

As the author of this research, I would like to take the opportunity to speak in first person to share my thoughts about this experience. During my internship at the commissioning company, I soon figured that there would be a need for a market research which would eventually benefit the company, as a whole. This thesis was not only beneficial for the firm, but for me as well to see how much I could absorb within a year whilst working in the Fintech sector. We see that this is a fast-changing environment and only those can remain in the key playing positions whose branding and performance results are attractive for customers.

I like to be up to date with news and recent innovations, therefore I play a business intel role in the company. I hope that with this thesis the reader receives a good understanding on Payment Service Processor and the core objectives that I set in the beginning. I believe that this paper serves as a good starting point for people getting into the sector and to those who are already in it would like to have a broader understanding of a specific country and the scheme it is investigated. In the future, I will be focusing on understanding other markets as well in order to deliver country specific studies for the firm and with it, deepening my understanding in the industry. I believe that my enthusiasm and devotion to this segment is conspicuous and my experience in this field demonstrated an exclusive interpretation of the gathered information.

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